

REMARKS

Applicants' attorney thanks the Examiner for the careful consideration given to this case. It is requested that the present amendment be entered since it places the claims in condition for allowance and/or reduces the issues on appeal.

For the Examiner's convenience, the amendments of the claims are summarized below.

- Claim 1 has been amended to include the subject matter of prior claim 18. The prior rejection of claim 18 under 35 USC 112, first paragraph, for failure to support the 0.6 wt% lower bound is in error since this value is particularly disclosed as follows in the first sentence of the paragraph bridging pages 8 and 9 of the original specification. "For generating the Al-containing phase exhibiting the effect of improving the flexural strength, Al_2O_3 is added to the main component, especially represented by $\text{Pb}_\alpha[(\text{Mn}_{1/3}\text{Nb}_{2/3})_x\text{Ti}_y\text{Zr}_z]\text{O}_3$ (formula (1)) in an amount of preferably 0.15 wt% or greater, more preferably 0.6 wt% or greater."

- The amendment of claim 8 to specify the lower bound of α as 1.0 is supported by Samples Nos. 49 and 50 in Table 8 of the original specification.

- Claim 15 has been amended to depend from claim 8, and the amendment is therefore supported by the original claims.

The rejection of claims 1, 4, 5 and 7 under 35 USC 103(a) as unpatentable over US 6,514,426 to Tanimoto et al. ("Tanimoto") in view of Taiji in "Electric-Field-Induced Crack Growth Behavior in PZT/Al₂O₃ Composites is overcome by amendment. More particularly, claim 1 has been amended to recite a lower limit of Al₂O₃ of 0.6wt%. In column 5, lines 56 - 58 of Tanimoto, it is stated that: "Furthermore, very small quantities of Al, Fe, Cl, etc. may be present as incidental impurities". But Tanimoto is silent as to the positive inclusion of Al₂O₃.

This deficiency in Tanimoto is not remedied by Taiji. More particularly, Taiji proposes to add 0.5 - 1.0 vol% of Al₂O₃ and this corresponds with 0.25 - 0.5wt% Al₂O₃ to PZT. Therefore, Taiji fails to teach or suggest the range of Al₂O₃ set forth in amended claim 1.

For the foregoing reasons, claims 1, 4, 5 and 7 are distinguished over the combined teachings of Tanimoto and Taiji as set forth in the action.

The rejection of claims 8-10, 13-15 and 17 under 35 USC 103(a) as unpatentable over Tanimoto in view of US 3,522,182 to Masao is overcome by amendment. Initially, it is noted that Tanimoto does not disclose Ga.

As noted above, the lower limit of α in claim 8 is amended to 1.0. In contrast, Tanimoto teaches an α range of $0.985 \leq \alpha$ (a in Tanimoto) ≤ 0.998 . Further, it is emphasized that sample No. 4 in Table 1 of Tanimoto, wherein $a=1$ or $\alpha=1$, is a comparative example since it has a lower flexural strength than the other samples. Therefore, Tanimoto teaches away from the range in claim 8 of the present invention.

It is further noted that the main component composition in Masao does not include Mn and Nb, and thereby fails to disclose the main component composition of claim 8.

The rejection of claims 11 - 12 and 16 under 35 USC 103(a) as unpatentable over Tanimoto in view of Masao as applied to claims 8 and 15 the above, and further in view of Taiji in "Electric-Field-Induced Crack Growth Behavior in PZT/Al₂O₃ Composites" is overcome by amendment. Claim 11 depends from claim 8 and for the reasons set forth above, claim 11 is not met by the combined teachings of Tanimoto in view of Masao. That is, the combined teachings of Tanimoto

and Masao do not suggest the claimed α range having a lower limit of 1.0. This deficiency of the combined teachings is not remedied by Taiji which is cited in respect to its teachings regarding Al_2O_3 .

For the above reasons, it is submitted that claims 8 - 10 and 13 - 15 are distinguished over the art and are in condition for allowance.

For all of the foregoing reasons, claims 1, 4, 5, 7-16, 19 and 20 are in condition for allowance and such action is requested.

If there are any fees required by this Amendment, please charge the same to Deposit Account No. 16-0820, Order No. OBA-40858.

Respectfully requested,

By: /joseph j corso/
Joseph J. Corso, Reg. No. 25845

1801 East Ninth Street, Suite 1200
Cleveland, Ohio 44114-3108
(216) 579-1700

November 17, 2011